

THE DER WEEKLY

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Industry News

Construction of an 80 MW wind power facility will begin in July on the Llano Estacado Wind Ranch at White Deer, Texas. **Cielo Wind Power, LLC**, and **Xcel Energy's Southwest Public Service Company** initiated the project. Cielo will build the site, which will include 80 Mitsubishi wind turbines that each generate 1 MW. Under a 15-year contract, Xcel Energy will purchase the electricity generated at the facility to power homes and businesses in their 52,000 square mile service area.

Aquila, Inc., a wholly owned subsidiary of UtiliCorp United, entered an agreement with **General Electric** to purchase 10 more turbines. In the past 12 months, Aquila has ordered a total of 21 turbines to use in its 18 projects nationwide. Aquila intends to place many of the newly purchased turbines in the Midwest. Each unit will generate 85 MW and will be used in simple-cycle peaking facilities.

Vericor Power Systems now offers to build **OnsitePower™ systems** directly at the site where the device will be used. OnsitePower™ systems provide power, steam, and hot or chilled water to industrial companies, which are based on Vericor's VPST™ 3 (ASE™ 40 3-MW gas turbine) and VPST™ 4 (ASE™ 50 gas turbine) aeroderivative gas turbine generator packages. (Vericor Power Systems is a joint company of Honeywell International, Inc., USA and MTU Aero Engines GmbH, Germany, a DaimlerChrysler company.)

Capstone Turbine Corporation and **Advantica Technologies Ltd.** (formerly BG Technology Ltd.) entered an agreement to provide electricity distribution in the United Kingdom and Ireland. Advantica will purchase 250 Capstone MicroTurbine™ power systems over the next two years for CHP applications and other uses.

Calpine Corporation signed two long-term power sales contracts totaling \$8.3 billion with the **California**

Department of Water Resources (DWR). Under one contract for \$5.2 billion, Calpine will sell up to 1,000 MW of competitively priced generation from its new energy centers. Deliveries under this agreement are scheduled to begin in July 2001, and will continue through 2011. The other contract for \$3.1 billion states that Calpine will supply DWR with up to 495 MW of peaking generation, starting with 90 MW in August 2001 and continuing through August 2002. Calpine proposes to build natural gas fueled peaking generators to help maintain reliable service during high power demand periods.

AFS Trinity Corporation entered an agreement with **FuelCell Energy, Inc.**, and **Inverpower Controls, Ltd.**, to use an advanced flywheel product from AFS. The device will be used in a system demonstration project with FuelCell Energy's 300kW Direct Fuel Cell and an advanced power electronics system from Inverpower.

U.S. Energy Systems, Inc., announced record earnings for the two-month fourth quarter and eleven-month period ending December 31, 2000. The president and COO of U.S. Energy Systems, Goran Mornhed, said the growth of the distributed generation marketplace will expand the company's CHP opportunities. The company reported that the two-month fourth quarter earnings increased by 100 percent and revenues for the eleven month period increased by 77 percent.

DOE News

Staff members from the **Office of Power Technologies (OPT)** gave a presentation to **Loretta Beaumont**, U.S. House of Representatives, Subcommittee on Interior and Related Agencies, on March 1. Deputy Assistant Secretary (DAS) Robert Dixon, Associate Deputy Assistant Secretary William Parks, Patricia Hoffman, Debbie Haught, and Ronald Fiskum briefed Ms. Beaumont on the interior programs within OPT. The briefing covered the technical programs, accomplishments, milestones, and partners of the office.

DAS Robert Dixon delivered a presentation on February 28 at the **National Association of State Energy Officials 2001 Energy Conference** in the Sector roundtable segment. The presentation was an overview of OPT's programs, accomplishments, and partners.

The 30-day ballot period started February 26, 2001 for the

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IEEE P1547/D7 Draft Standard for Interconnecting Distributed Resources With Electric Power Systems. In March 1999, the IEEE approved the project developing this standard, designated P1547. Early on, the P1547 working group members voted unanimously to develop this standard on a fast track for publication in 2001, about half the time it normally has taken for development of similar standards. The report, *Making Connections*, released by the Department in May 2000, identified the lack of a uniform national standard for interconnecting distributed energy resources with electric power systems as one of the major market barriers to distributed energy resources. And industry has said that establishing a national standard is their highest priority. The importance of this standard to industry is evidenced by the unusually large number of participants in the process; the P1547 working group membership is comprised over 300 representatives from electric utilities, energy service companies, manufacturers, system integrators, consultants, testing organizations, codes and standards bodies, state agencies, and public interest groups.

The P1547 project has met its milestone of having a draft standard for ballot by March 2001 and is on schedule to have an approved standard by the end of 2001. DOE's support has been essential to meeting industry's requirement to shorten the standard develop time to less than 3 years. The success of this effort is due in large part to the leadership role assumed by the National Renewable Energy Laboratory through Richard DeBlasio, who chairs both the IEEE P1547 working group and its parent, Standards Coordinating Committee 21.

At the Combined Heat and Power (CHP) Hill Briefing on February 26, Anne-Marie Borbely-Bartis, from Battelle Memorial Institute, gave a **presentation on CHP: Energy Reliability and Supply Enhancement**. Richard Brent, from Solar Turbines, Inc., also gave a presentation.

Patricia Hoffman met with the DOE regional office directors to develop a strategy for implementing DER. Each office submitted a strategy, and DOE headquarters is reviewing them.

Utility Commissioners and staff from about 10 states either recently initiating or considering proceedings to establish DER rules met on February at the **National Association of Regulatory Utility Commissioner's** (NARUC) Winter Committee Meetings in Washington, DC. The meeting was organized by DOE's Distributed Power Program and Ann Thompson of the Vermont Public Service Board. Joe Galdo (OPT) and Gary Nakarado (NREL) participated in the meeting, which was chaired by Roger Hamilton, Oregon Public Utility Commissioner and head of NARUC's Renewable and Distributed Resource Subcommittee. The purpose of meeting was to establish a forum through which states who are just beginning DER rulemaking proceedings can share information and pool resources, as well as leverage assistance that might be provided by DOE. Alison Silverstein, from the **Texas Public**

Utility Commission, discussed Texas' experience in developing DER rules and provided copies of the "*Distributed Generation Interconnection Manual*," which was developed with assistance from **DOE's Distributed Power Program** and recently published by the Texas PUC. The state participants identified a number of areas where technical assistance from DOE is needed. Mechanisms for exchange of information were suggested, and it was agreed to hold a workshop or session at the NARUC Summer Committee Meetings in Seattle, WA, in July 2001 to continue the process.

DOE's Distributed Power Program is hosting a workshop with the Urban Consortium to develop an education campaign, including technical information and training materials, on DER technologies and related codes and standards. The workshop will be held Tuesday, March 27, 2001, at the Forrestal Building, Washington, DC.

New York State Energy Research and Development Authority (NYSERDA) and **Electrotek** reached an agreement with Verizon staff that operate over 4 MW of backup generating capacity in Long Island Power Authority (LIPA) territory (New York) to conduct a study of the feasibility of operating their backup generators and selling energy/capacity in various markets. This study will help reveal locational benefits of DG. The Verizon generators in Suffolk County, where the circuit demand becomes very high in the summer, have problems maintaining adequate voltage, and the Verizon generators must operate to protect their equipment. LIPA is particularly interested in the potential locational benefits that NYSERDA and Electrotek will uncover. A new transmission line under the Long Island Sound is planned, but DG may make it unnecessary. NYSERDA and Electrotek have also agreed to conduct a feasibility study with Entenmann's Bakery, which operates three generators along with one normally dormant backup generator with a 1,350 kW capacity. NYSERDA/Electrotek plan to examine how best to market this capacity. It will involve an investigation of the operation of the generator in parallel with the LIPA System.

Ben Kroposki, Bruce Field, and Jim Johnson (NREL), Rick Winter and Robert Reid (Powercell), and David Burnett (Associated Electric Power) conducted a meeting and tour of NREL's System Interconnection Test Facility in Golden, CO, on February 22. The meeting focused on plans for conducting validation testing of IEEE P1547 on Powercell's PowerBlock 100kWh Zinc-Bromide battery bank. Associated Electric

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The Weekly Factoid

The investment in fuel cells is expected to increase from \$240 million in 1999 to \$380 million by 2003, up 58 percent. The sale of microturbines is expected to increase by 421 percent, growing from \$240 million in 1999 to \$1250 million in 2003. ("Clean Distributed Generation: Policy Options to Promote Clean Air and Reliability," *The Electricity Journal*, Jan./Feb. 2001.)

Power and Williams Energy Services have been operating a PowerBlock 100kWh battery and two Capstone 30kW microturbines in a remote location in Colorado. The testing that would be conducted at NREL would focus on validating the IEEE P1547 Interconnection Standard, including response to voltage and frequency disturbances, anti-islanding tests, power quality, and surge testing. The testing would also determine how well the units work in various configurations with other types of generation

sources.

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Richard DeBlasio, NREL Distributed Power Program technology manager and IEEE Standards Coordinating Committee, was interviewed by BusinessWeek journalist Janet Ginsburg in the February 26, 2001, edition of the magazine. In an article titled "Reinventing the Power Grid," which appeared in the Science and Technology section, DeBlasio describes companies warming up to decentralized production of electric power in the United

## Feature of the Week

### **EERE Electricity Restructuring Program Review: February 28-March 1, 2001**

*Grant recipients, DOE and other government agencies, and NGOs gather to share research, activities and ideas.*

Representatives from thirteen grant recipient organizations assembled in Washington, DC on February 28 and March 1, 2001, to share the work they completed under FY99 and FY00 DOE electricity restructuring grants. Larry Mansueti, Acting Director of the Electricity Restructuring program, organized the meeting in an effort to bring the organizations together for discussion and to learn from one another's activities and studies. Officials from DOE, EPA, USDA, and members of non-governmental organizations attended the meeting as well. Reports, presentations, and other materials from the meeting and the grant projects will soon be posted on OPT's Electricity Restructuring Web site at [www.eren.doe.gov/electricity\\_restructuring](http://www.eren.doe.gov/electricity_restructuring).

Participating grant recipient organizations and presenters included:

- American Council for an Energy Efficient Economy, Marty Kushler
- Enervision, Inc., Mark Nofi and Katherine Johnson
- Land and Water Fund of the Rockies, Rick Gilliam
- Lawrence Berkeley National Laboratory, Chuck Goldman
- National Association of Energy Services Companies, Donald Gilligan
- National Conference of State Legislators, Matthew Brown
- National Council on Competition and the Electric Industry, Rich Cowart
- National Governors' Association, Ethan Brown
- Northeast Energy Efficiency Council, Mike Sherman
- Northeast-Midwest Institute, Susan Freedman
- Regulatory Assistance Project, Cheryl Harrington
- Southern States Energy Board, Carolyn Drake
- Western Interstate Energy Board, Doug Larson

Grant recipients not able to attend the meeting were the Governors' Public Power Alliance, National Association of State Utility Consumer Advocates, and National Association of State Energy Officials.

Presentations included descriptions of research on grid and transmission issues, energy efficiency in different regions of the U.S., renewable energy in state-level and regional electricity markets, Native American solar projects in Arizona, demand response opportunities for ESCOs, distributed generation in restructured markets, assistance to state policy makers on restructuring, and other topics.

States. The article states that the DOE enthusiastically backed IEEE efforts to develop a national interconnection standard for distributed energy resources. DeBlasio was quoted as saying that the IEEE efforts "were beyond the planning stages. This is real." Others who were interviewed included Amory Lovins of the Rocky Mountain Institute; Kurt Yeager, CEO of the Electric Power Research Institute; James LoGerfo, Bank of America Securities; and Mahmud Chaudry, general manager of Los Angeles Power and Water.

On February 27, Joe Eto from Lawrence Berkeley National Laboratory, representing the Consortium for Electric Reliability Technology Solutions (CERTS), gave a presentation on the current research activities CERTS is undertaking for the Transmission Reliability Program related to load as a reliability resource. In attendance were representatives from the EE OPT and OPM Offices and the DOE Policy Office. Interruptible loads can be sold into the energy market in response to high energy prices, as operating reserves in place of standby generation, and as other ancillary services. The Program is examining existing utility interruptible load programs that have the characteristics to provide these services and is investigating new classes of loads, load controller designs, and the economic impact of load control on the power system. The briefing also included work CERTS

is performing with funding from the California Energy Commission to assist the California Independent System Operator in redesigning and developing load responsive programs.

On February 26-27, a Distributed Energy Resources (DER) projects planning meeting was held at the **Electric Power Research Institute's Power Electronics Application Center (EPRI-PEAC)** in Knoxville, Tennessee. Mike Howard, Tom Key, and the staff of EPRI-PEAC hosted the meeting. Attendees included representatives of the utility industry, Duke Power – Charlotte, NC, Lincoln Electric System – Lincoln, NE, Lenoir City Utilities Board - a local TVA distributor; equipment suppliers, IR Energy Systems, Thompson Power Corp., equipment manufacturers, Caterpillar, Cummins, Onan, Basler, and two national laboratories, Oak Ridge National Laboratory (ORNL), and Sandia National Laboratory. Tom Rizy and Dave Stinton attended the meeting for ORNL. EPRI-PEAC is proposing a number of new projects to test the interconnection of DER technologies to the power grid. Specifically the projects are proposing to test DER emissions (i.e., harmonics) into the grid, immunity of DER to power grid disturbances, interactions between multiple and different DER technologies (i.e. rotating and static machines), DER anti-islanding provisions, and the integration of various energy storage technologies (i.e. flywheels, ultra capacitors) with DER. Also, the testing projects are intended to test drive the new draft IEEE DER Interconnection Standards P1547 as well as develop testing protocols and procedures.

## CALENDAR OF EVENTS

| Date              | Event                                                             | Location        | Other Information                                     |
|-------------------|-------------------------------------------------------------------|-----------------|-------------------------------------------------------|
| <b>MARCH 2001</b> |                                                                   |                 |                                                       |
| 5-6               | Hydrogen Technical Advisory Panel                                 | Washington ,DC  | eileen_kalim@nrel.gov                                 |
| 6                 | Hill Briefing: Electricity 101-Overview of General Energy Issues  | Washington, DC  | Suzane Watson, 202-464-4018, swatson@nemw.org.        |
| 8                 | NREL Brown Bag Series: Renewable Energy and Real Options Analysis | Washington, DC  | www.nrel.gov/events.html                              |
| 20-24             | Distributed Generation Conference                                 | San Diego, CA   | www.powerin.org                                       |
| 20-21             | Fuel Cell Investor 2001                                           | Boston, MA      | www.srinstitute.com/cr188                             |
| 21-23             | 5th Annual Distributed Generation and On-site Power Conference    | New Orleans, LA | Pat Hoffman to give keynote address; www.dist-gen.com |
| 21-23             | Western Energy Institute Distributed Generation Conference        | San Diego, CA   | www.powerin.org/distgenregform.html                   |
| 22-24             | Building Energy Conference                                        | Boston, MA      | Jonathon Tauer 413-774-6051, ext. 20                  |

## CALENDAR OF EVENTS

| Date                | Event                                                                                                                         | Location          | Other Information                                      |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------------------------------------------------|
| <b>APRIL 2001</b>   |                                                                                                                               |                   |                                                        |
| 2-3                 | Business Communications Company's 1 <sup>st</sup> Fuel Cell Conference                                                        | San Antonio, TX   | www.buscom.com                                         |
| 23-25               | Intertech's Fifth International Conference on Distributed Power                                                               | Washington, D.C.  | Hugh Olmstead; olmstead@intertechusa.com; 207-281-9606 |
| <b>MAY 2001</b>     |                                                                                                                               |                   |                                                        |
| 1-3                 | Industrial Energy Technology Conference                                                                                       | Houston, TX       | jim@esl.tamu.edu                                       |
| 9-10                | Energy Management Conference                                                                                                  | San Diego, CA     | Sponsored by FEMP; www.aeecenter.org                   |
| 21-23               | Third Annual ICEPAG (International Colloquium and Exhibit on Environmentally Preferred Advanced Energy Generation) Conference | Newport Beach, CA | More information next issue                            |
| 24-25               | Together with the First United Nations and DOE (FE and EE) Conference on Hybrid Power Systems                                 | Newport Beach, CA | More information next issue                            |
| 30-31               | Fuel Cells Codes & Standards Summit V                                                                                         | College Park, MD  | ronald.fiskum@ee.doe.gov                               |
| <b>JUNE 2001</b>    |                                                                                                                               |                   |                                                        |
| 3-6                 | FEMP Energy 2001 Conference                                                                                                   | Kansas City, MO   | www.energy2001.ee.doe.gov                              |
| 3-7                 | WindPower 2001 Conference                                                                                                     | Washington, DC    | www.awea.org; laura_keelan@awea.org                    |
| 11-13               | International Symposium on Distributed Generation: Power System and Market Aspects                                            | Stockholm, Sweden | www.ekc.kth.se/ees/workshop/DG.htm                     |
| 18-20               | APPA National Conference                                                                                                      | Washington, DC    | www.appanet.org                                        |
| <b>JULY 2001</b>    |                                                                                                                               |                   |                                                        |
| 10-12               | Gas Storage Workshop                                                                                                          | Kingston, Ontario | David Quinn; quinn-d@rmc.ca                            |
| 24-27               | ACEEE Summer Study                                                                                                            | Tarrytown, NY     | www.aceee.org; Rebecca Lunetta 302-292-3966            |
| <b>AUGUST 2001</b>  |                                                                                                                               |                   |                                                        |
| 29-Sep 3            | IEEC Integrated Energy Efficiency Congress                                                                                    | Cleveland, OH     | Sponsored in part by FEMP; www.aeecenter.org           |
| <b>OCTOBER 2001</b> |                                                                                                                               |                   |                                                        |
| 24-26               | World Energy Engineering Congress                                                                                             | Atlanta, GA       | www.agcc.org                                           |